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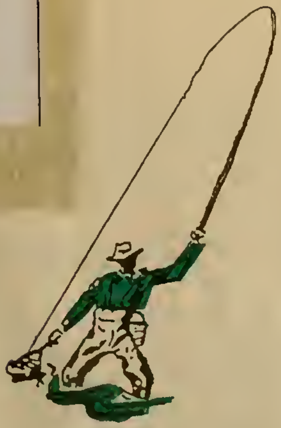

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Saving the Pallid Sturgeon: NEW HOPE FOR AN OLD FISH

By Bruce Auchly

Let's be realistic. Until last year, the future of the pallid sturgeon in the Missouri and Yellowstone rivers looked dim, lackluster, kind of, well, pallid. There were too few adult fish to spawn regularly and reservoirs swallowed up any young that did hatch.

Last August, state and federal fisheries officials stocked 1,500 one-year-old pallids in the two rivers. There are still not enough adult pallids and no evidence of spawning, but the clouds of extinction have lifted a little.

In the Missouri, there are perhaps 50 adult pallid sturgeons swimming in the 150-mile stretch of the river between the mouth of the Marias River near Fort Benton and the head of Fort Peck Reservoir, downstream of the Fred Robinson Bridge. That does not bode well for a self-sustaining population, explains Bill Gardner, Fish, Wildlife and Parks fisheries biologist in Lewistown. "Let's say of those 50 fish, 25 are males," he says. "Males spawn every year. Then there are 25 females. Females spawn every three years. That means there are about 8 females and 25 males available to spawn in any year."

One hundred fifty miles of river represents an awfully big stretch for those few fish to find each other and get amorous. "That's part of the problem," says Gardner. "They have too many years when they don't reproduce successfully."

Fort Peck reservoir is another part of the problem. "Fort Peck has a bad bottom for bottom feeders like pallid sturgeon," Gardner says. For newly hatched pallids, a reservoir is a death sentence; they sink in the mud and suffocate.

Biologists estimate there are 250 pallids in the Missouri below Fort Peck -- a 240-mile stretch to the headwaters of Lake Sakakawea in North Dakota -- and the lower 70 miles of the Yellowstone River. The numbers seem to indicate that ecosystem represents the endangered species last best chance at a self-sustaining population in Montana. But the numbers are deceiving. No pallid spawning has been found and the culprit again may be a reservoir: Lake Sakakawea. "That's what we think," says Jim Liebelt, FWP fisheries biologist in Fort Peck. "We've found no concrete evidence of spawning. No yearling has ever been recovered."

Last year, Montana, North Dakota and federal fisheries biologists released 750 one-year-old pallids at three spots in the upper Missouri. The fish were raised in a federal fish hatchery in Gavins Point, S.D. Another 750 pallids were set free in the Missouri near the Montana-North Dakota state line and in the lower Yellowstone. This year, a mixture of one and two year olds will be planted, though fewer fish overall than in 1998.

Ideally, stocking will build up the pallid population in the two areas, while preserving and maintaining the gene pool. Just don't expect quick results. Female pallids take up to 15 years to reach sexual maturity. That means no one will have any idea if these dinosaurs are reproducing successfully until the year 2013. Gentlemen, start your calendars.

DINOSAURS Much has been written about the pallid sturgeon's connection with the dinosaurs. While *Tyrannosaurus Rex* strutted about nearly 200 million years ago in what is now Montana, pallids swam nearby. Just a thought here but *T. Rex* is extremely fashionable nowadays, and it's been dead and gone for 50 million years or more. Imagine the popularity of the toothy meat eaters if there were 50 still lumbering around eastern Montana. Meanwhile, the homely pallid still swims near the bottom of a muddy river. Few people ever see them and fewer care.

Anyway, today's popular game fish are evolutionary babies by comparison. The oldest known trout fossil dates back 50 million years. Biologists guess the salmonid family began about 100 million years ago.

For a couple of hundred million years, the pallid and its cousin, the shovelnose sturgeon, didn't change and were able to cope with evolution around them. However, man's modifications to North America's rivers -- dams and channelization -- came too fast for the primitive pallid to adjust. Oddly, the shovelnose in the same waters is doing just fine, thank you. No one is sure why, though theories abound.

Shovelnose may still be prospering because their young behave differently than those of pallids. When shovelnose spawn the eggs take about a week to 10 days to develop into larval fry, which look like a couple of inches of sewing thread with two pinheads for eyes. After hatching, the larvae break free of the bottom and begin to drift downstream until they settle again on the river bottom, and therein, apparently, lies the difference between the successful shovelnose and the unsuccessful pallid: shovelnose larvae drift for about a week, pallid larvae drift for 10 to 15 days. On the upper Missouri, a drift of nearly two weeks puts those larvae into Fort Peck reservoir, where they sink and die.

"The fish that do well in Fort Peck are mid or surface feeders," Gardner says. "Young paddlefish probably say, Yippee, we're in heaven. Young pallids probably sink to the bottom and say, Yuck, what is this muck?"

The same occurs below Fort Peck Dam. The Missouri coming out of Fort Peck is too cold, about 50 degrees, leaving nearly 50 miles downstream of the dam inhospitable to pallid reproduction. The Yellowstone is warm enough and has no dams or reservoirs. Biologists have identified at least one possible spawning area in the lower Yellowstone. But at 50 miles upstream of the head of Sakakawea, the spot may produce young pallids only to have them drift downstream and smother in the North Dakota reservoir.

AS A SPECIES, pallid sturgeon probably began its inexorable march to extinction in the upper Missouri with commercial fishing 100 years ago. They were once common in the Missouri, Mississippi, Yellowstone, Platte, Kansas, Ohio, Arkansas, Red, Sunflower and Atchafalaya rivers from Montana to the Gulf of Mexico. Outside of Montana, the only rivers pallids are slightly more common in today are parts of the Mississippi and the Atchafalaya. The pallid sturgeon was declared a federally endangered species in 1990.

In Montana, the construction of the Fort Peck Dam in the mid-1930s seems to have finally pushed the fish down the slope to oblivion. A federal roster of pallid sightings has 500 sightings listed in the 1960's, 209 in the 70's, and only 56 in the 80's.

Because North Dakota's Lake Sakakawea was created 20 years later, in the late 1950s, biologists fear that reservoir merely reflects Fort Peck of the 1970s. Current estimates count the pallid population at 250 in the Missouri upstream of Lake Sakakawea. "We had 20 more years to degenerate," Gardner says, comparing Fort Peck to Lake Sakakawea. "Their time is coming."

Pallid sturgeons live a long time, perhaps, up to 60 years. So it's conceivable the sightings in the 1980s could have been fish alive when Fort Peck was built. But Gardner believes most of the 50 or so adult fish in the river now hatched after the reservoir filled. "It's hard for me to believe that all those fish out there are 62 years old," he says.

Certainly that's the case with the smallest fish Gardner and his fisheries crew has found: a 21-pounder, probably 20 to 25 years old. Liebelt's team has captured a 19-pound pallid on the lower Yellowstone and a 15 pounder in the Missouri. It's uncertain how old those fish are because aging pallids is difficult.

Most fish are aged by looking at their scales under a microscope. Each year, the fish adds a ring to its scales, like a tree. Unfortunately sturgeons don't have scales; they have skutes or bony plates. Skutes are the sign of an evolutionary geriatric, evolving about 500 million years ago. Fish scales are much, much younger. "To age pallids," Gardner explains, "you take a piece of their pectoral fin, do a cross section on that just like you would a deer tooth and count the rings."

Yet even taking a piece of the fin does not always yield a born-on date. The older the fish, the more compact the rings, making accuracy questionable, Liebelt says. "Even on shovelnose, they have done a lot of aging, and it's not really accurate once you get past 15 to 20 years."

The idea, of course, is to find out when the fish spawned. Pallids younger than 62 indicate reproduction took place sometime since Fort Peck filled, possibly during high flow years of 1964 and 1975. "I think they spawned in 1975," Gardner says. By discovering when pallids spawned successfully, Gardner says, it may be possible to duplicate those conditions again, using a dam to release or withhold water.

Faced with few definite answers, declining pallid populations and no evidence of young fish, biologists decided to track the hatchery-raised pallids stocked last summer. Of the 750 stocked in the upper river last year, 45 fish had radio transmitters implanted. Of these, says Garnder, 22 provided good tracking data. Below Fort Peck, Liebelt's crew followed 24 transmitting pallids on the Missouri and 25 on the Yellowstone. The radios beeped data for three months before the batteries burned out.

Gardner found fish released at the Robinson Bridge didn't drift very far, 5 or 6 miles. Pallids stocked at the mouth of the Judith River drifted downstream a few more miles. But yearling sturgeon released near the mouth of the Marias drifted the farthest, some almost 150 miles to the Robinson Bridge. "And these are yearling fish. They're not helpless like larval fry," Gardner says.

Gardner concludes that the steeper the river gradient, the more the fish have a tendency to drift. "The more the fish drift the more I'm convinced it's not a good thing," he says. "If they drifted 150 miles in 3 months they have to be looking for better habitat."

Liebelt's pallids stayed put by comparison, moving no more than 6.5 miles upstream and about 4 miles downstream from the release site on the Missouri. On the Yellowstone, the fish didn't move more than 11 miles downstream and 8 miles upstream. Measurements taken at the release sites indicate pallids select areas associated with sandy bottoms in 5 to 6 feet of water where the current flows about 2.3 feet per second.

THIS YEAR WILL BE a repeat of 1998 with a few important twists. First, 2-year-old pallids will be stocked along with 1 year olds. Second, Gardner will stock pallids near Coal Banks Landing not at the mouth of the Marias. The river at Coal Banks is not as steep as at the Marias. Also, some of the radio-implanted fish will not start sending out signals until the spring of 2000. "We want to see what happens to the fish over the winter," Gardner says. "I will also be comparing the survival differences between yearlings and 2-year-olds."

In addition to his regular stocking, Liebelt plans on placing about 140 2-year-olds in the lower Milk River to look at that tributary's role in pallid sturgeon survival.

For the long term, the key will be learning what event in the past caused pallids to reproduce. Was it the high water years of 1964 and 1975?

If only a few dozen were in the river to spawn in 1975, that would explain why the fisheries crews have found so few younger fish. The conditions were right but there were too few fish to have much of an impact. "With stocking," Gardner says, "the idea is to increase the number of fish so the next time a spawning event occurs there will be more pallids available to spawn."

Stocking also may help establish a pallid population farther upstream where they could spawn and have a longer time to drift and develop primary fins before reaching the unsuitable lake conditions of Fort Peck. "If the fry are developed enough to maintain their position in river habitat above the Fort Peck delta," Gardner says, "they will find suitable nursery areas. It they drift past the delta into the reservoir they're dead meat.."

By man's hand the fish plummeted; by man's hand maybe it will recover.

AS GOOD GRAYLING SHOULD

By Patrick Byorth

Midsummer found Thomas Jefferson's Corps of Discovery in the doldrums. The men were exhausted, suffering the ravages of mosquitos, prickly pear, and jagged river rock. Rations were lean, game and morale dwindling.

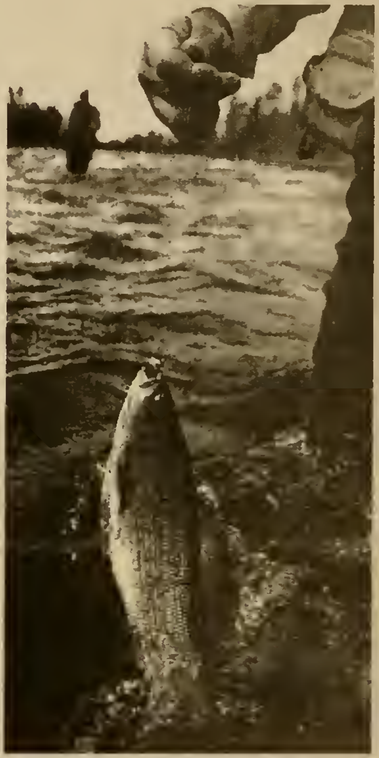
Meriwether Lewis split the expedition near Beaverhead Rock, not far from the present-day town of Dillon. Lewis and a small contingent set out to find the Shoshone and a route through the rampart guarding the Pacific; the ailing Captain Clark was to follow with the bulk of the men and supplies.

When the two groups reassembled at a place called Camp Fortunate, there was much to celebrate: Sacagawea was reunited with her brother, Shoshone Chief Cameahwait, and Lewis had seen the headwaters of the Columbia. A feast, pieced together from the meager stores of the expedition and those of the river, included westslope cutthroat trout and Arctic grayling, beans and corn, beaver and venison.

With a brush drag woven of willow and dogwood, the men seined 528 cutthroat and "a douzen of a white speceis of trout," or Arctic grayling. Thus, among the significant events that transpired August 22, 1805, was the first "scientific" documentation of the grayling.

The fortunes of the Arctic grayling, however, had been cast during the Pleistocene epoch thousands of years before, when continental ice sheets blanketed North America. Grayling thrived along their margins. When the ice receded northward, grayling were left behind like footprints, testimony to the glaciers' retreat.

While Meriwether Lewis first recorded the grayling at the base of the Continental Divide, he could as easily have observed it during the Corps' portage of the Great Falls, at their encampment at the three forks of the Missouri, or at numerous other places along their route. By the time Lewis and Clark arrived in Montana in 1805, Arctic grayling had flourished throughout the headwaters of the Missouri for more than 10,000 years.



Grayling are intrepid travelers, making long seasonal migrations to exploit peak conditions for spawning, rearing, feeding, and wintering. In the Madison River, for instance, grayling historically wintered in the deep pools and springs of Beartrap Canyon. Each April, when the Madison burst through its icy shroud, they reenacted an ancient6 spawning ritual. Some headed upstream a few miles to Meadow Creek, or spawned in the Madison where it braided through cottonwood bottoms at the head of the canyon. Many traveled 45 miles to congregate at Horsethief Springs, where stable flows and productive water gave the young a boost.

After spawning, grayling dispersed throughout the basin, some traveling to the food-rich waters of Yellowstone National Park, some turning down-stream to seek other productive feeding areas. Yearling grayling wandered throughout the upper Missouri, adapting to a variety of habitats in the Jefferson, Ruby, Beaverhead, Big Hole, Missouri, Sun, Teton, Smith and Gallatin rivers.

This wandering lifestyle represented a perfect adaptation to life in the headwaters of the Missouri, as long as the rivers ran free. But as these rivers were harnessed for hydropower and irrigation, the fortunes of the Arctic grayling changed. By April of 1903, grayling migrating up the Madison River to spawn literally swam into a wall: Madison Dam near Ennis. Oldtimers tell stories of Arctic grayling "stacked up below the dam so thick you could walk across the river on their backs and not get your boots wet."

Settlers took advantage of the temporary abundance and took wagonloads home to smoke. But the abundance was short-lived, because the Madison migration route was severed. The grayling spawning grounds at Horsethief Springs met a similar demise under the waters of Hebgen Reservoir, filled in 1915. By the 1950's, Clark Canyon Dam submerged Camp Fortunate and cut off grayling travel from the Beaverhead to Horse Prairie Creek and the Red Rock River.

A long line of dams, including Canyon Ferry, Ruby, Hauser, Holter and Toston, provided water vital to irrigators and supplied electricity to the new residents of the upper Missouri drainage, but left the grayling population fragmented. Other challenges-overharvest, introduction of non-native trout, and habitat changes-contributed to the demise of the river-dwelling Arctic grayling in a few short years of its centuries-long existence.

But one hardy population of Arctic grayling survived the onslaught of development to remind us of what Montana was like when Lewis and Clark named the rivers. In the upper 75 miles of the river Lewis named the Wisdom, now known as the Big Hole, this last population of river-dwelling grayling in the lower 48 states teetered on the edge of extinction. For a time, fewer than 30 juvenile and adult Arctic grayling could be found per mile in prime waters near Wisdom.

In 1987 the Arctic Grayling Recovery Program was formed to identify and mitigate factors limiting the population and to establish a brood stock that could be used to restore the Arctic grayling to some of its former range (see "Native on the Brink," July/August 1993). By the mid-1990s, the restoration program had boosted numbers to over 75 per mile, with increased presence throughout the drainage. The program was successful because local communities saw value in these native fish and banded together as the Big Hole Watershed Committee to preserve them.

Additional motivation to cooperate came in the form of a petition to list the fluvial or river-dwelling Arctic grayling as an endangered species. While the potential impacts of listing under the Endangered Species Act mobilized support for the recovery program, it also generated fears that local control would be lost. Although the Big Hole Arctic grayling population was now stable, the second component of the recovery program-restoring the grayling to portions of its historic range-was at risk. Agencies and citizens alike were caught in a "Catch-22"-in order to truly recover Arctic grayling in the upper Missouri and render endangered species status unnecessary, additional populations would need to be reestablished to buffer the risk of extinction. However, few citizens are comfortable with having an endangered species introduced into their backyard.

To allay these fears, the U.S. Fish and Wildlife Service and Montana Fish, Wildlife & Parks (FWP) entered into an innovative agreement that provides a measure of certainty that endangered status can be forestalled by significant progress toward recovery. The long range goal is to establish five viable, self-sustaining populations of fluvial Arctic grayling throughout the upper Missouri drainage by the year 2020. The interim goal is to have at least four reintroduction efforts underway by December 31, 2000.

Once again, Montanans find themselves at a crossroads, where our history and that of a native species may either remain on the same track or part company. Montana Fish, Wildlife & Parks and the cooperators in the Arctic Grayling Recovery Program are leading the charge to ensure we have a common future.

While the campaign to reintroduce Arctic grayling is new to many people, it has been underway for more than a decade. Using the combined talents of fish culturists and geneticists, managers began developing a fluvial Arctic grayling brood source in the mid-1980s. Over several years, wild Big Hole River graying were captured during the spawning run so that eggs could be collected and fertilized.

Young from each year's spawn were raised to spawning age and backcrossed with the other year classes to capture the genetic diversity existing in the wild population. Brood reserves were established in state and federal hatcheries and in a mountain lake near Ennis.

Meanwhile, a researcher at Montana State University investigated upper Missouri basin streams that were likely candidates for reestablishment of Arctic grayling populations. Grayling were experimentally stocked in the East and West Gallatin rivers and in Cougar Creek in Yellowstone National Park. The results were mixed but promising-the fish survived and grew through several winters and traveled long distances, as good grayling should. But the need was clear for long, unimpeded reaches of stream with low densities of competitors.

Equipped with a genetically representative brood stock, the Arctic Grayling Recover Program launched its first grayling reintroduction in the upper Ruby River a few years ago. The first step was approaching the community of the Ruby Valley to openly and honestly consider the risks and benefits of reintroducing a potentially endangered species in their backyard. Understandably, some citizens were initially suspicious. Wonderfully, they agreed to take a chance.

The Ruby River upstream from Ruby Reservoir offers more than 40 miles of good Arctic grayling habitat. Indeed, before the dam was built, Arctic grayling thrived there. One early settler related a memorable trip up the Ruby-the last he enjoyed in a buckboard before resorting to an automobile-when he, his father, and a hired man camped under the stars near the three forks of the Ruby and caught, cooked, and ate Arctic grayling. The deep pools, runs, and gravel bars of the upper Ruby still carry the clean, cool water sought by this species.

After careful planning and considering myriad variables, biologists released 30,000 Arctic grayling fry in the fall of 1997, followed by 10,000 more in 1998, with additional plants slated into 2000. Within three months of the initial plant, the fingerlings grew an inch and held their ground. As fluvial Arctic grayling should, they ignored the reservoir even through harsh winters and stayed in the upper basin. In April of 2000 the first grayling plants will become sexually mature. Thus, the first Arctic grayling in the Ruby in over 50 years may be hatched in the wild next spring!

Another auspicious event in the annals of Arctic grayling history took place this summer when fish were stocked in the North and South forks of the Sun River upstream from Gibson Reservoir. The fact that these reintroductions took place in the Bob Marshall and Scapegoat Wilderness Areas presented some logistical challenges. Utilizing a combination of pack stock and rubber rafts, biologists transported 12,000 young grayling for release in these pristine rivers this past July. State and federal fisheries biologists will closely monitor this year's plants and others scheduled through 2002 in hopes of seeing wild, self-sustaining Arctic grayling populations develop.
The conspicuous absence of Arctic grayling along the Lewis and Clark Trail may be rectified by three additional reintroductions now in planning stages.
At the junction of the Gallatin, Madison, and Jefferson rivers at Three Forks, the rivers suffer a variety of habitat, temperature, and flow problems. Trout densities there are low relative to those of nearby blue-ribbon streams. With few competitors and access to miles of river in each of the forks of the Missouri, Arctic grayling may be able to exploit habitats that will enable them to survive.

The section of the Beaverhead River lying in the shadow of Beaverhead Rock offers another potential area for grayling reintroductions. Unlike the renowned tailwaters of Clark Canyon Reservoir, this reach supports low densities of brown trout. Water releases from the reservoir create a "backwards" pattern, where high flows come in late fall and early winter. This anomaly, along with whirling disease and some habitat problems, leaves a gap where grayling may thrive (grayling are largely resistant to whirling disease). Fish stocked here will have access to over 40 miles of potentially suitable habitat in the Beaverhead, Jefferson, and lower Ruby rivers.

The hue and cry of critics is inevitable when attempting any action to preserve a species. Some people say there is no point in trying to turn back the clock. Yet, Montanans share a common responsibility to protect and maintain all the resources we have been endowed with, not just the beautiful, powerful, or popular. If we could ask Cameahwait or Lewis and Clark how we should treat the Arctic grayling, we believe the answer would be, "Treat them with respect." With good luck and hard work, Arctic grayling will again wander the waters of the Missouri, as good grayling should.

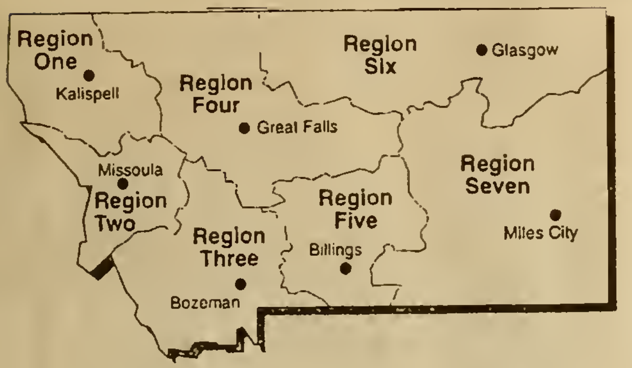
ON THE BOOKSHELF

FLY FISHING THE MOUNTAIN LAKES, by Gary LaFontaine Greycliff Publishing Co., P. O. Box 1273, Helena, MT 59624 (406)443-1888; 1998, 190 pages, soft cover, $14.95.
In this book acclaimed fly fishing author Gary LaFontaine shares a summer's angling on mountain lakes, detailing where to find trout and how to catch them. As in his other works, LaFontaine excels as a thinker and researcher - his revelations are often at odds with conventional wisdom, and his insights are likely to change your approach to fishing these waters. Despite LaFontaine's devotion to scientific study, above all else he likes to have fun fishing, and you'll have fun going with him to places like Park Lake near Helena, the Hog Hole near his home in Deer Lodge, Cave Lake in the Crazies, and some remote and hard-to-reach high-country jewels.

CLASSIC FRESHWATER FISH COOKING, by Eileen Clarke, Voyager Press, P.O. Box 338, Stillwater, MN 55082 (800)888-9653; 1998, 128 pgs, hard cover, $24.95 & $3.95 shipping.
Eileen Clarke's book is packed with nearly 100 time-tested, lip-smacking recipes for trout, salmon, walleye, northern pike, bass, and more. From "Lemony Stuffed Walleye Rolls" to "Trout Almondine," these proven recipes from around the world will make any dinner a treat. Nicely illustrated with color photos of fish, fishing scenes, and prepared dishes, the book contains more than recipes. There's good information on freezers and freezing, wrapping and packaging, thawing (naturally or by microwave), filleting fish, and sharpening knives.

SEASONS OF THE TROUT: STRATEGIES FOR THE YEAR-ROUND WESTERN ANGLER, by Neale Streeks, Pruett Publishing Co., 7464 Arapahoe Rd, Ste A-9, Boulder, CO 80303 (800)247-8224; 1998, 272 pages, hard cover, $29.95.
The author, a veteran flyfishing guide and instructor, provides a seasonal calendar for fishing western waters by breaking the angling year into five seasons: mountain spring, early summer, high summer, autumn, and winter. For each season, river conditions, trout behavior, hatches, and fishing advice are presented simply and clearly to help ease the reader onto the path of understanding. Streeks points out that most technical books on insect hatches leave the reader a little stunned with information overload. But beginning anglers want and need simple, straighforward information about bugs that will help them catch fish and learn about trout behavior - that's what this book provides.

MONTANA REGIONAL UPDATES



REGION ONE - KALISPELL

It's been a busy year in Region 1 where all the biologists are good looking and all the fish are above average. In general, it's been a good year of fishing and those that chose to chase fins rather than fur or feathers had an incredible fall.

BULL TROUT GAINS

The good news is that bull trout have shown real gains across most of northwest Montana in the last few years. The Flathead system, which bottomed out in the early '90s, produced 215 redds which is the second gain in a row. This is still less than half the spawners in the "good old days" of the 1980s so we're not out of the woods yet. The increases are thought to be due to a combination of angling restrictions, good water years which produced better flows and cleaned spawning gravels, a reduction in lake trout, and habitat protection and enhancement.

The Swan drainage redd counts (501) dipped slightly this year but that's not of too much concern since we're coming off a half dozen years of record counts. The biggest news is in the upper Kootenai drainage. Biologists counted 849 redds in the Wigwam River in British Columbia alone. There are probably several thousand redds or more in the whole upper drainage, making this the strongest bull trout population in the U.S. The downside to all this is that bull trout were listed range-wide so we'll have to wait for other populations to catch up.

RECORD GAMEFISH CAUGHT

This year produced four record gamefish in Region 1. Most people think trout and salmon when they think of Glacier Country but all but one of these records were for warm or cool-water fish. In February a 8.0 inch, 0.18 lb. pygmy whitefish was taken from Ashley Lake. It smashed the existing state record by 0.02 pounds! In March a 36 lb., 8 oz. northern pike was caught in a Flathead River Slough. The pike was just a pound off the state record but was accepted as the 8 lb. test line class world record by the Freshwater Fishing Hall of Fame. In June a 8.29 lb. largemouth bass was caught from the Many Lakes area near Bigfork. The young angler didn't realize he'd beaten the state record by 0.13 lbs. until this fall when he took the fish in to be mounted. And in July, an angler caught a 6.34 lb. smallmouth bass from the Flathead River near the confluence with the Clark Fork River. Interestingly, the smallmouths are the result of an unintentional plant on the Flathead Reservation.

CABINET GORGE AND NOXON RAPIDS DAMS

This year also saw the completion of a two-year collaborative process to relicense Cabinet Gorge and Noxon Rapids dams. The effort was led by AVISTA (formerly Washington Water Power) which owns the dams. The effort involved dozens of groups and will provide resources and funding for recreation, wildlife, and fisheries including native fish restoration, watershed councils, habitat enhancement, fish passage, monitoring, and education and enforcement. The program also provides offsite funding for the Thompson River which, coupled with a recently adopted slot limit, should provide a real turn around in that fisheries.

HOOKED ON FISHING, NOT ON DRUGS PROGRAM

The other exciting project this year was the continued growth of the "Hooked on Fishing, Not on Drugs" school program and the urban fishing program. The HOFNOD program now involves over 1,200 4th graders in 60 schools. Fishing activities are worked into school activities such as biology, math, and English. The response is overwhelming and we now have four part-time coordinators/instructors and dozens of volunteers. At the same time we've developed good fishing opportunities in or near towns through an aggressive stocking program with super support from the hatchery programs. Many of the HOFNOD field trips are to these urban/family fishing sites and we see many of the same kids coming back on evenings or weekends, by foot or bicycle, and with Mom, Dad, or Grandpa. We think programs like this will ensure a brighter future for our youth and the future of fishing.

ILLEGAL FISH INTRODUCTIONS

Illegal fish introductions continue to show up across the state. This year has turned up reports of northern pike in Cooney Reservoir, bluegills in Canyon Ferry, brown trout in a Flathead River tributary (Mill Creek), and largemouth bass and northern pike in the Base Trout Pond near Glasgow. Fathead minnows have suddenly appeared in a half dozen ponds in the Clark Fork, Kootenai, and Flathead drainages and brown trout appeared in five locations in the Kootenai above and below Libby Dam. Several private fish ponds have been poisoned out, but in many cases the fish are on the loose. Hubbart Reservoir near Kalispell was poisoned this fall at a cost of $25,000 to remove unwanted stunted perch and shiners. And, of course, illegally introduced walleyes have embroiled management of Canyon Ferry in controversy.

FWP has now documented 345 illegal introductions in 214 waters. Illegal introductions may be the biggest threat facing the future of your fishing. Get involved, spread the word, help stop this harmful, wasteful practice.

REGION TWO - MISSOULA

BITTERROOT RIVER

In 1998 and 1999 we placed radio transmitters in cutthroat trout in the West Fork and main Bitterroot River near Darby. We found that the Nez Perce Fork is a critical spawning tributary for the upper Bitterroot River even as far downstream as Darby. Population estimates continue to show increasing trends in the number of adult cutthroat trout in the River.

Fishing was very good on the Bitterroot River in 1999. The high quality fishing has led to increasing numbers of anglers. The upper Bitterroot River is the heaviest fished reach of river on a per mile basis in western Montana.

On the down side, the increasing development of the Bitterroot Valley is reflected in the large number of stream modification applications in the Bitterroot River and tributaries. Typically the Bitterroot Conservation District processes the highest number of 310 permits in the state.

A whirling disease positive rainbow trout was collected in the upper Bitterroot. It is the first confirmed case since sampling began in 1995. Also, goldfish have been found in several ponds in the Bitterroot Valley. One was sighted by a local guide in the Bitterroot and three smallmouth bass were caught by an angler in the Bitterroot River. To finish on a positive note, the Bitterroot basin was closed to most new surface water right applications for awhile.

In 1999, R-2 fisheries personnel continued to concentrate on watershed and native species restoration efforts in western Montana. Work in the Blackfoot River drainage has become a model for large-scale watershed restoration. In 1999, a dozen more projects were completed, adding to the more than 100 projects implemented on 35 streams over the past decade. Similar efforts are underway in Rock Creek and many other Clark Fork River tributaries. Projects address a wide range of habitat problems associated with riparian management, fish migration barriers, stream channel alterations, and water diversions.

Ongoing fisheries research projects are providing valuable information for native species management and assessment of anthropogenic impacts. Major telemetry studies were completed on westslope cutthroat trout and bull trout in the Bitterroot River, Blackfoot River, Rock Creek and the Clark Fork River. Radio telemetry has allowed biologists to track movements of migratory trout and to identify critical periods and habitats; for example, the timing and location of spawning areas in tributaries. Extensive work at Milltown Dam has documented the timing, number, and species of fish whose migration has been blocked by the dam. This information highlighted the necessity for planned fish passage changes at the dam.

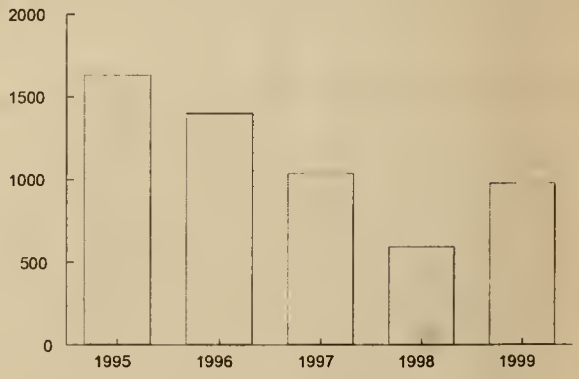
Unauthorized fish introductions continue and are one of the greatest threats to fisheries in Montana. In 1999, biologists concentrated on impacts of recent northern pike introductions in the Clearwater Chain of Lakes, Milltown Reservoir, and the Clark Fork River. Sampling was conducted to estimate northern pike abundance and determine diet, movement patterns and angler harvest.

Work continued on improving access for anglers in the region. New fishing access sites on the Bitterroot and Clark Fork Rivers were pursued, including several sites in the popular Alberton Gorge section

REGION THREE - BOZEMAN

YELLOWSTONE RIVER AT LIVINGSTON

In the Ninth Street section, near Livingston, trout abundance actually increased, reversing a three-year trend of population declines (Figure for rainbow trout provided below). This increase coincides with the re-establishment of habitat features lost during unusually large floods in 1996 and 1997. Apparently, fish that had moved out of this area as a consequence of channel modifications caused by the large floods are returning now that the channel has had an opportunity to heal.



Rainbow trout abundance in the Ninth Street section of the Yellowstone river based on spring sampling from 1995 to 1999. Estimates are for fish seven inches (TL) or longer. Vertical scale is fish/mile.

Trout abundance in most sections of the Yellowstone river sampled this spring appears stable; the number of fish in most sections of the river was similar to numbers estimated in previous years.

THE WEST GALLATIN RIVER TROUT POPULATIONS: WEATHERING THE STORM

It has been difficult to remain optimistic about Montana's natural resources of late, with the onslaught of development and increased human population. The West Gallatin River is no exception. This jewel in one of Montana's fastest growing counties has been enduring more than its share of impacts. Intensive development in the Big Sky area, burgeoning commercial and private white water boating, and increased fishing pressure have all diminished pristine appearances and elbow room in the Gallatin Canyon. These changes have alerted anglers, both resident and non-, to potential impacts on the health of trout populations in the West Gallatin. The current regulation setting process has drawn a number of demands for more restrictive regulations on harvest and tackle as the perception that "fishing quality " has declined.

Wild trout management is based on the premise that Mother Nature produces a higher quality, healthier trout population than humans can by stocking. As long as humans protect aquatic habitats, including water quality and quantity, our rivers and streams will naturally produce enough fish for anglers and other predators. Wild trout managers rely on population monitoring to keep a watchful eye on the health of trout populations. Good, solid population data cuts through perceptions and the vagaries of politics to allow managers to make rational, science-based decisions.

The West Gallatin River flows through a high elevation, narrow canyon that maintains cold water temperatures in the summer and creates extremely harsh conditions in the winter. The cool summer water temperatures and long winters result in slow growing trout. An average rainbow trout in the upper West Gallatin River will grow only to 8 inches in its first 3 years, reaching 12 inches only after 4 to 5 years. Severe winter conditions, including hazardous anchor ice, regulates trout abundance. Older, large fish winter in deep pools and are much less likely to succumb to winter mortality due to anchor ice. Younger fish tend to winter between rocks in the stream bottom, where anchor ice forms and can trap or crush them. Because of the variations in severity of winters in Montana, the production of young fish also varies significantly.

Since 1980, anglers concerned about overfishing on the West Gallatin River have called for restrictive regulations to protect trout populations. In 1981, FWP responded by implementing a slot limit of 3 trout under 13 inches and 1over 22 inches. Slot limits are designed to protect intermediate-sized fish and promote growth, while encouraging harvest of small fish. Population censuses by standard electrofishing techniques demonstrated that the regulation failed to increase numbers or sizes of trout; indeed, the harsh winter conditions and cool mid-summer water temperatures regulate trout size and density throughout the Gallatin River from Shed's Bridge to the headwaters.

Three standard population monitoring sections in the upper West Gallatin River keep biologists apprised of the health of trout populations. The Porcupine Section extends from Porcupine Creek to the West Fork of the Gallatin and is representative of the upper reaches of the West Gallatin. Over the years, the rainbow trout in the Porcupine Section have maintained a stable population. This reach, like the majority of the upper West Gallatin River is dominated by rainbow trout, with relatively few brown trout. Rainbow trout density in the Porcupine section was the highest on record in 1998, showing no relationship between increased fishing pressure and trout density. Biologists documented wide variation in numbers of young fish, which indicates high mortality. This is common in systems with extensive winter icing. As fish grow, they become less susceptible to winter mortality, but more susceptible to anglers. High numbers of fish larger than 8 and 13 inches (3 to 5 years old) counted in 1998 contradicts what would be expected if angling exploitation was limiting the population.

The West Gallatin River undergoes a significant change between the Porcupine Section and the Jack Smith Section, which extends below the West Fork to Deer Creek. A number of natural springs, the West Fork of the West Gallatin River, and groundwater carrying nutrients from development all contribute to changes in flows and productivity. Overall rainbow trout populations in the Jack Smith Bridge declined by nearly 50% through the late 1990's. However, the decline was primarily in younger, smaller age classes of fish (less than 10 inches, age 3 and younger). The number of fish greater than 10 inches declined moderately, but fell within expected ranges of variability. The number of larger, mature fish over 13 inches long has remained stable, even increasing slightly when compared to densities while the slot limit was in effect (1982-1983). Once again, such a decrease in smaller fish and younger age classes reflects a climatic or reproductive limitation. Stability in older age classes does not support a limitation by angling exploitation. The density of age 4 and older rainbow trout has not changed significantly over the years in the Jack Smith Section. However, trout in the Jack Smith Section face additional risks. A pocket of whirling disease infestation has been documented in the area. This low intensity infection along with a proposal to discharge treated sewage effluent will expand the need for close monitoring of trout populations in this reach.

The Williams Bridge section is situated just below the mouth of the Gallatin Canyon. Rainbow trout are still predominant, but brown trout numbers are substantial and browns grow larger there. Both rainbow and brown trout populations in the Williams Bridge Section are very stable. While water temperatures remain cool in this section, winters are somewhat less severe than in Gallatin Canyon, although some variability is still expected in a rapid runoff river of this nature. Neither rainbow nor brown trout populations show signs of overfishing in this reach.

Angling success is regulated by a broad set of unpredictable variables, anything from water temperature, weather, an anglers level of expertise, or even phase of the moon. The vast variability in catch rates from day to day or year to year make fishing a poor predictor of fish abundance or the health of the population. While population monitoring shows that increased fishing pressure has not impacted trout populations, increased pressure may have impacted catch rates as fish "wise up".

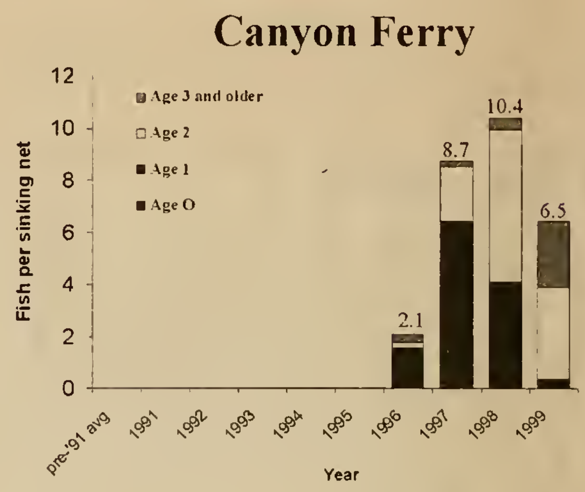
While there are many reasons to remain diligent in protecting a treasure such as the West Gallatin River against the tide of challenges confronting it, there are as many reasons to be optimistic. The wild rainbow and brown trout populations of the West Gallatin remain healthy, providing the average angler with miles of blue ribbon fishing. With more anglers and boaters on the water, a little extra effort is required to find solace, but plenty still exists on the West Gallatin River... and the rewards are worth the effort.

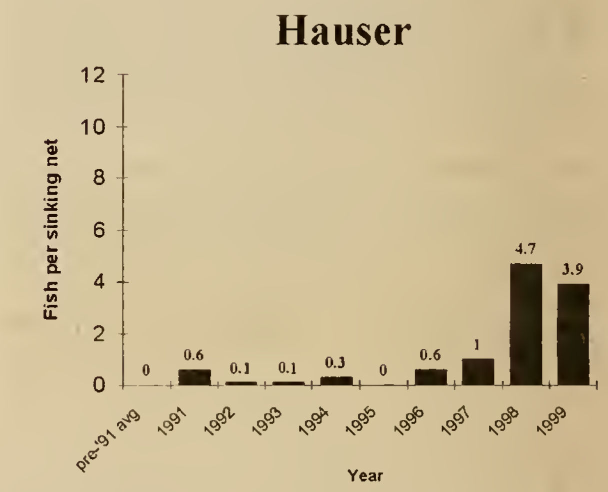
REGIONS 3 AND 4 COLLABORATE ON UPPER MISSOURI RESERVOIR FISHERY PLAN (2000-2009)

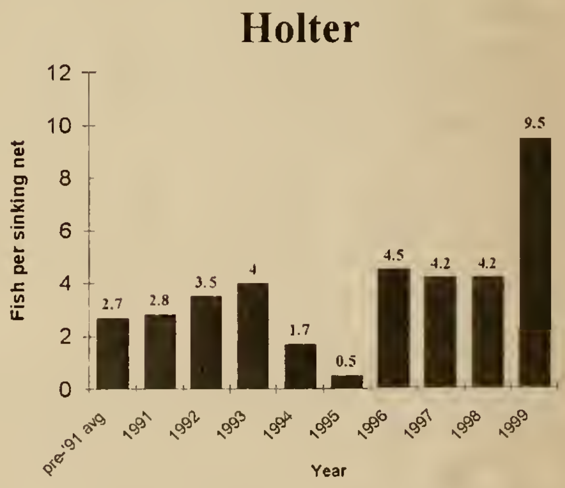
The Upper Missouri River Reservoir Management Plan was prepared during 1999 by personnel from both Regions 3 and 4. Public comment on the plan was taken through October 22, 1999 and the plan will be finalized in January, 2000. This 10-year plan was written to direct fisheries management for the Missouri River from Toston Dam to Holter Dam, including three major reservoirs (Canyon Ferry, Hauser, and Holter) and the associated river segments. The overall goal of the plan was to manage the three-reservoir system as a high-quality, cost-effective, multi-species fishery with high levels of angler satisfaction. Multi-species was defined to include a "balanced" mixture of existing species (walleye, yellow perch, kokanee salmon, rainbow trout, brown trout, and burbot).

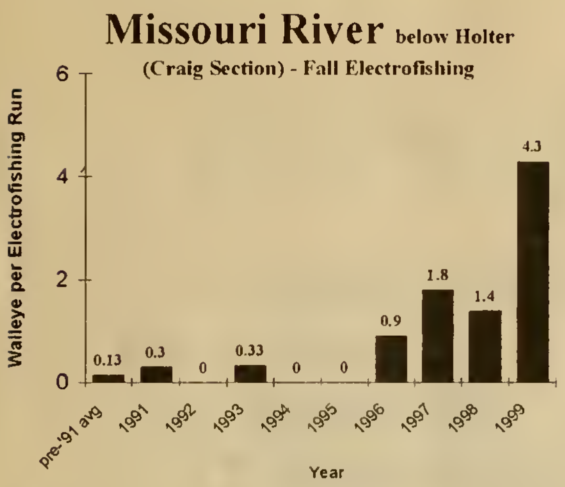
One of the more controversial recommendations of the plan was to liberalize angler harvest regulations on walleye in response to the increasing walleye populations in the system (see figures of walleye trends). The purpose of attempting to increase walleye harvest by anglers was to attempt to slow the growth of the walleye population to reduce the likelihood that an over-abundance of walleye would adversely impact the multi-species assemblage in the future. The plan proposed to increase the walleye limit from 5 to 20/day at Canyon Ferry, 5 to 10/day at Hauser Lake, and from 4 to 6/day at Holter. The increased angler harvest resulting from the liberalized limits are NOT intended to reduce walleye populations, but rather to slow population growth to improve long term quality of the existing fishery.

In addition to the change in walleye limits, the plan also proposed a daily limit of 50 yellow perch for Canyon Ferry, Hauser, and Holter Lakes. The FWP Commission adopted these recommendations at their regulation setting meeting in November, and anglers should consult the new regulations prior to fishing the Upper Missouri Reservoir Complex next spring.









MADISON P, M, E

FERC issued the Final EIS for the 2188 Project (Madison-Missouri hydropower), which commits $250,000 annually from PPL Montana (formerly Montana Power Company) for fisheries protection, mitigation, and enhancement projects. Unspent money will be carried into subsequent years and can be accumulated for large, expensive projects.

CHERRY CREEK NATIVE FISH INTRODUCTIONS

Due to a bill passed by the 1999 Montana Legislature, FWP re-applied for three necessary permits from the Montana Department of Environmental Quality. Following a public comment period, the permits were issued by DEQ on October 14, but DEQ's action was immediately appealed. Standard procedure mandates a suspension of the permits once appealed. The appeal will be heard as a contested case hearing. The Montana Board of Environmental Review assigned a hearing officer who expects to conduct the hearing in April, 2000.

ARCTIC GRAYLING RECOVERY PROGRAM 1999

BIG HOLE RIVER :
Worked continued with landowners and the Big Hole Watershed Committee to maintain instream flows in the Big Hole River and protect the Arctic grayling population. With little summer precipitation and dropping instream flows, a newly adopted drought management plan was implemented. Angling was closed in a 55 mile stretch of the upper Big Hole River from August 29-September 24 to reduce any additional stress in key grayling habitats. During this period a stock water well program utilizing wells instead of ditches watered approximately 6,000 cattle and returned diverted water back into the river increasing flows from approximately 20 to 40 cfs near Wisdom.

RUBY RIVER:
Upper Ruby River grayling restoration efforts have thus far been encouraging. Some of the grayling planted in 1998 survived over winter and remained in the upper river upstream of Ruby Reservoir. These survivors should be mature in the spring of 2000 and represent the first year class that may naturally reproduce. An additional plant is scheduled for summer 2000.

OTHER RIVERS:

Restorations efforts expanded with initial introductions of fluvial grayling in the North and South Forks of the Sun River, and the lower Beaverhead River (5 miles downstream of Dillon to Twin Bridges). Fluvial Arctic grayling will be planted annually in these two systems until 2002 to potentially establish self sustaining naturally reproducing populations. An additional restoration effort will be initiated in summer 2000 in the Missouri Headwaters. Yearling grayling will be planted for four consecutive years near Three Forks in the Missouri and its headwater tributaries.

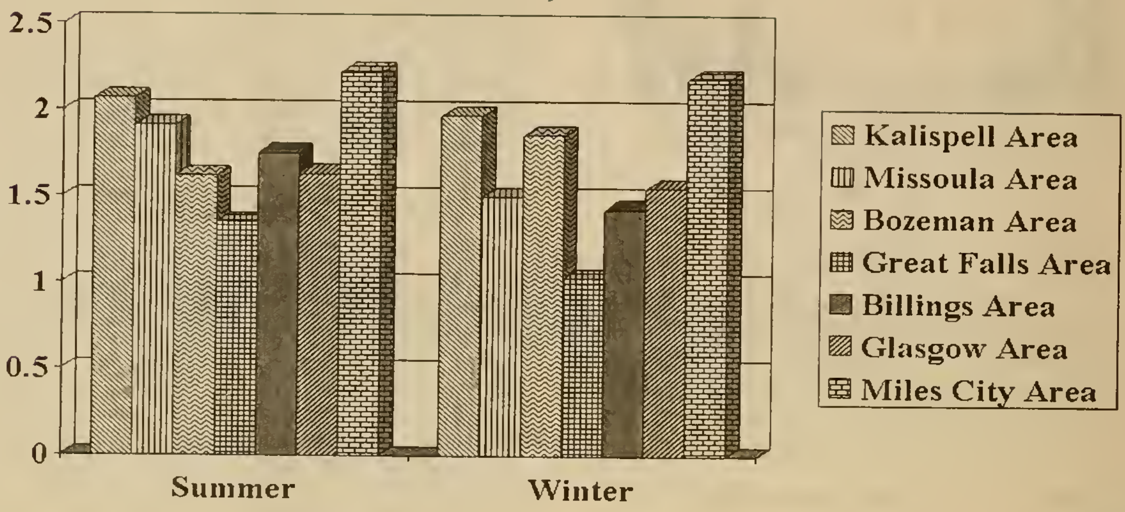
BIG HOLE RIVER DROUGHT RESPONSE PLAN

In 1999, final edits were made and the Drought Response Plan was accepted by the Big Hole Watershed Committee. When low flows hit the upper river reach in August, an emergency closure to angling was swiftly initiated and upper river ranchers turned off five ditches and began using alternative stockwater wells. In summary, river flows more than doubled from lows below the critical 20 cfs to stabilize at more than 40 cfs which resulted in a relatively swift lifting of the angling closure while more than 6,000 head of cattle were watered from the wells. While more fine tuning probably needs to be incorporated into the upper river reach plan, the system worked well on short notice and avoided all of the past trauma and controversy associated with drought conditions on the Big Hole.

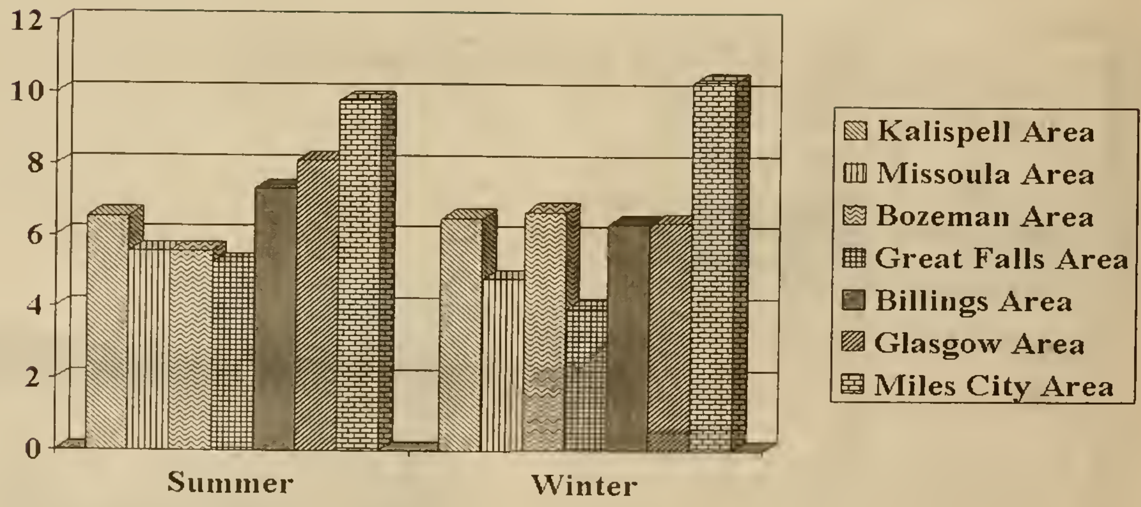
GRAYLING INTRODUCTIONS / BROOD MANAGEMENT

In 1999, fluvial grayling reintroduction into the upper Ruby proceeded into its third successful summer while first time introductions of yearling grayling occurred in the upper Sun and lower Beaverhead Rivers. The Sun River introduction came off well despite difficult logistics and some controversy generated from the outfitting industry. The Beaverhead introduction went smoothly and without controversy despite extremely short timelines. The fluvial grayling brood at Axolotl Lake was secured for the future through the acquisition of the property surrounding the lake from a cooperative landowner. In addition to fluvial grayling introductions, a brood for the adfluvial native Red Rock Lakes grayling was initiated with an introduction of young of the year fish to a 17 acre pond along Red Rock River owned by Turner Enterprises.

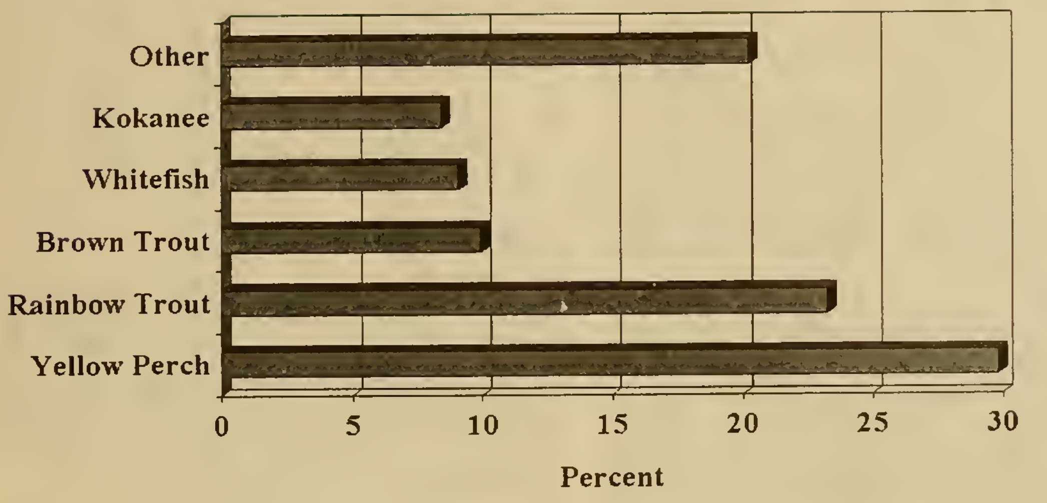
Average Number of Fish Caught Per Hour
1998 Log Year



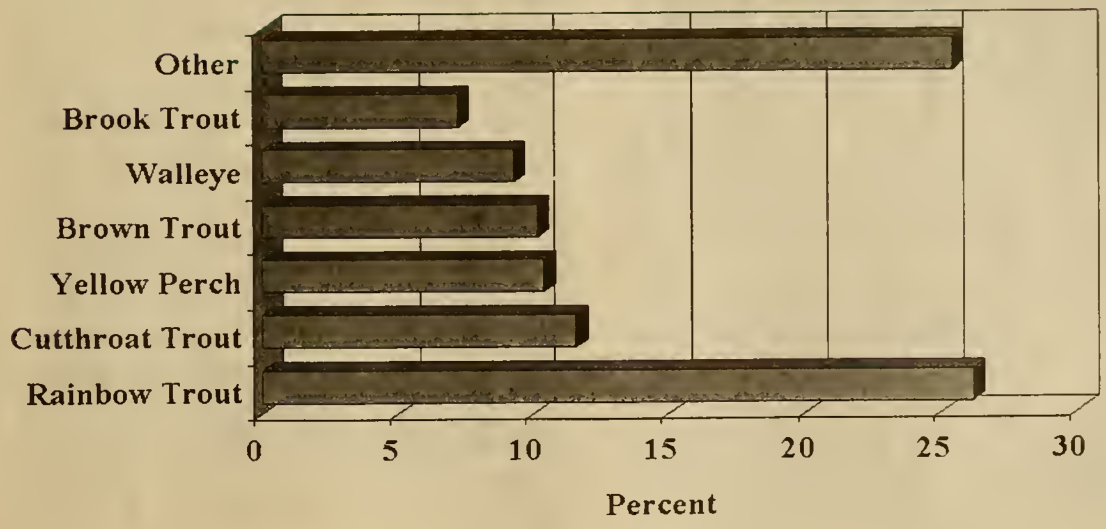
Average Number of Fish Caught Per Day
1998 Log Year



Statewide Top Game and Sport Fish
December 1997 Through April 1998



Statewide Top Game and Sport Fish
May 1998 Through November 1998



REGION FOUR - GREAT FALLS

SUN RIVER GRAYLING INTRODUCTION

After nearly two years of planning and preparation, native Montana fluvial ("river dwelling") arctic grayling were introduced into the North and South Forks of the Sun River upstream from Gibson Reservoir this summer. There were huge logistical challenges, due mostly to the fact these rivers lie in roadless wilderness areas. Consequently, no aircraft or mechanized equipment could be used. It had to be done the old fashioned way, using horsepower. To complicate things even more, the decision was made to stock relatively large grayling (7-8 inch average length), since previous studies have shown their chances of survival are substantially higher than if fry are stocked. Here's the rub, a horse can carry several hundred fry but can only carry 50-75 of the bigger fish. Net result - substantially more horses and people required to get the job done.

This effort was probably the largest, most well coordinated fisheries project conducted in central Montana in the past 30 or more years. Private citizen volunteers and FWP employees from various divisions (fisheries, enforcement, wildlife, conservation education, and administration) came from across the state to help out. The U.S. Forest Service provided a tremendous amount of assistance in the form of personnel, livestock, equipment, and use of wilderness cabins and trailhead facilities. Forest Service pack strings from the Rocky Mountain Front, Lincoln, and Hungry Horse districts all came to help. The Missouri River Flyfishers club (Great Falls) provided $700 for leasing of horses to help out.

When all was said and done, approximately 5,000-6,000 grayling were stocked in each river in June/July. The fish arrived at their final destinations in great shape, a tribute to the careful planning and extra efforts of all involved.

FWP surveys and angler reports indicated that survival of the stocked fish was excellent in the North Fork and surprisingly poor in the South Fork. Biologists are not sure why the South Fork fish fared poorly but it may be due to the fact these fish were stocked in late June when river flows were quite high. These fish may have moved with the high water into Gibson Reservoir. Stocking will continue in both forks for 2-4 more years before final conclusions are reached. The project will be successful if river populations can be established which sustain themselves over the long term solely by natural reproduction.

TIBER CISCO UPDATE

Evaluation of the 1997 and 1998 stocking of cisco fry (6 million per year) into Tiber Reservoir is continuing. Recent surveys confirmed survival of the 1997 plant was phenomenal, while the 1998 success was much lower. The 1997 fish grew rapidly and about 25% of them spawned in fall 1998. Unfortunately, flows from the Marias River into Tiber Reservoir were near record low last winter and some of the eggs laid along shorelines were likely lost.

FWP received special funding from the U.S. Bureau of Reclamation (the agency which operates Tiber Dam) to conduct a research project this fall and winter to determine where and when cisco spawn in Tiber. The ultimate objective is to get biological information to use in developing water level management guidelines for the reservoir. In October, 40 sonic transmitters were placed in pre-spawn female cisco. These fish are being tracked during and after the spawning season to try and pinpoint preferred spawning habitat. Efforts will also be made to collect eggs from the reservoir bottom to determine preferred spawning depths.

The main purpose of the cisco introduction is to improve food availability for walleye by establishing a naturally reproducing cisco population. While only about 25% of the 1997 cisco yearclass spawned last fall, our studies indicate virtually 100% of that group of fish spawned this fall, mostly in early December. If all goes well, we expect hundreds of millions of fry to hatch out this spring. The survival of this anticipated huge Y2K yearclass should tell us much about how this new resident of Tiber is going to favor its new home.

So far, walleye have not eaten many cisco in Tiber. This is because most of the cisco are too large right now for walleye to eat. Biologists have carefully examined the stomachs of more than 400 walleye during 1997-1999 and have found the remains of only one cisco. Northern pike are a different story. About 20% of the northern pike stomachs examined in 1999 had cisco remains. Northerns can ingest huge prey and are having no problem gobbling down the cisco, which are mostly larger than 10 inches long at present. If the Y2K cisco yearclass survives well, we expect to begin seeing small cisco in walleye stomachs late next summer and especially in 2001.

MISSOURI RIVER WHIRLING DISEASE

Biologists continue to closely track the progression of whirling disease (WD) infection in the Missouri River and its tributaries downstream from Holter Dam. The 35-mile reach from Holter Dam to Cascade is a top notch trout fishery known nationally and is typically one of the most heavily fished river sections in Montana. Researchers from Montana State University and FWP are taking a drainage-wide approach to monitor the progression of the disease and understand the factors which determine the severity of infection.

This disease is caused by an exotic microscopic parasite that lives for a time within the body of tiny *Tubifex* worms which live on the bottoms of streams and rivers. Just a few short years ago, when WD was first found in Montana, worm specialists believed *Tubifex* would rarely be found in Montana's major trout streams. As it turns out, this idea was wrong. Recent surveys in the Missouri drainage and elsewhere reveal these worms are very widespread. They have been found in significant numbers in places where researchers did not expect to find them. Recent surveys have found significant worm numbers in all three of the main spawning tributaries to the Missouri (Little Prickly Pear Creek, Dearborn River, and Sheep Creek).

Cages of test fish were placed at four locations on the Missouri River and at various locations on five important rainbow trout spawning tributaries in 1998. In contrast to the Madison, most Missouri River rainbows spawn in tributary streams rather in the mainstem river. Results indicated the severity of WD infection on Little Prickly Pear Creek increased markedly to the point where it is now one of the most severe infections reported thus far in Montana. Little Prickly Pear has two smaller tributaries (Lyons and Wolf creeks) where the infection continues to be absent or present at low levels. WD was detected for the first time in Sheep Creek in 1998 while the Dearborn River remained WD-free. Infection rates in the river continued to increase.

The big questions in the Missouri are: 1) how widespread and severe will the infection become, and 2) will the diverse life history pattern of the rainbow trout and the variety of spawning locations allow a healthy trout population to continue to exist in the presence of WD. From a life history standpoint, the Missouri rainbows appear to have a good chance of avoiding catastrophic infection **IF** many of the key spawning and rearing areas do not develop severe infections. Operation of new hi-tech fish traps on Little Prickly Pear and the Dearborn revealed the majority of young rainbows spend their first winter in the spawning tributaries and do not migrate to the Missouri until the following spring. This is a useful strategy as long as some of the key spawning/rearing tributaries do not become heavily infected with WD. Lab studies suggest the overwintered juvenile rainbows should be fairly resistant to WD once they reach the Missouri due to their larger size. We hope to test this theory with field and lab studies in 2000.

In the meantime, we expect to see some decline in the production of young rainbows in the upper river near Craig because Little Prickly Pear Creek is the major spawning and rearing area for these fish. Fish population trend information collected this fall in the Craig area suggests yearling rainbow numbers are lower than normal, but much of the data analysis remains to be done.

UPPER MISSOURI RESERVOIRS

As mentioned elsewhere in this newsletter, FWP is in the final stages of completing a fisheries management plan for Canyon Ferry, Hauser and Holter reservoirs. One of the toughest issues has been how to manage what appears to be a growing walleye population throughout the system. Annual fish population surveys by FWP biologists indicate there have been recent substantial increases in walleye numbers in Hauser, Holter, and the Missouri River downstream from Holter. The size and age of walleye showing up in surveys matches a strong yearclass of walleye produced in Canyon Ferry in 1997 and biologists believe high water that year flushed a significant number into downstream waters. We are concerned that too many walleye in Hauser and Holter could adversely affect other popular sport species, including rainbow trout, yellow perch and kokanee salmon. Hauser walleye are substantially "skinnier" than the same fish in Canyon Ferry or Holter, indicating the availability of prey fish in Hauser is already limited. It is not clear what effect, if any, increased walleye numbers might have on the "blue ribbon" trout fishery in the Missouri River downstream from Holter Dam.

Another issue that has recently "surfaced" on Hauser is low levels of dissolved oxygen in late summer in waters released from Canyon Ferry Dam. FWP, Montana Power (now PP&L Montana), and the U.S. Bureau of Reclamation are currently collaborating on studies to investigate this problem. As it turns out, oxygen-deficient water is being released annually in August, September, and October from Canyon Ferry Dam into Hauser Reservoir. There is little evidence of outright fish kills from low oxygen in Hauser but the observed levels are well below the state water quality standard and are known to be detrimental to aquatic life.

This was first discovered in 1996 but evidence suggests this problem has probably been around for a long time, perhaps back to 1955 when Canyon Ferry Reservoir was created. The waters flowing into Canyon Ferry are very fertile and they stimulate dense growths of phytoplankton (microscopic plants) in the surface waters of the reservoir. Dissolved oxygen in the deepwater areas of the reservoir is used up in late summer by bacteria that decompose the dying phytoplankton. The outlet tubes in Canyon Ferry Dam draw from this deep de-oxygenated layer of water, creating the problem downstream. An experimental spill of water over the dam was tested in early fall and results are pending. Other possible solutions include modification of the generator outlets to improve aeration.

REGION FIVE - BILLINGS

BIGHORN RIVER

Anglers generally found higher flows on the Bighorn during 1999, although peak flows did not reach the high levels seen in recent years. River flows remained around 3,500 cfs through the winter, dropped to around 2,500 cfs for a couple of weeks in April before spring runoff started, then increased to over 6,000 cfs by the first week in May. Flows remained above 6,000 cfs through the end of July with peak flows of about 10,000 cfs in June. Even after runoff, Bighorn flows remained around 3,500 cfs for the rest of the summer.

Some anglers reported that insect hatches were more erratic with the higher flows, but anglers found good to great fishing throughout the year. Higher average flows caused the river to warm faster than normal, so water temperatures were quite high by early July. With the warmer temperatures, fishing became difficult during the middle of the day, but remained good early and late in the day.

June electrofishing in the standard shocking section downstream of Three Mile Access produced mixed results. There were lots of 15 to 18 inch rainbow and 16 to 17 inch brown trout, but fewer 18 inch and larger trout. Numbers of smaller trout were also down from levels seen in the upper section in recent years.

The longer the Bighorn is sampled the more apparent it becomes how varying flow conditions can affect fish movement and distribution within the river. A year class of fish can be almost totally missing from a shocking section one year and be a major component of the population in that section the next year. Many smaller trout apparently move downstream out of the upper shocking section during years of above average flows. This kind of movement was evident in 1999 when the smaller rainbow and brown trout that were missing from the upper section in the spring showed up in large numbers in the lower section near Mallards Landing FAS in the fall. Fall shocking collected good populations of 14 to 18 inch rainbow and 12 to 17 inch brown trout, but there were also large numbers of 7 to 11 inch trout in this section. Many young-of-the-year (YOY) rainbows and browns were also collected in the lower section in the fall.

Strong recruitment of young fish is another of the positive signs that whirling disease still hasn't become established in the Bighorn. Another sample of trout from the Bighorn was tested for whirling disease this summer and all fish came back negative. A test cage with captive rainbow was placed in the river for a week this summer to determine whether whirling disease might be present in low levels; results from these fish are not back yet.

Fish, Wildlife and Parks, in cooperation with the Bighorn Alliance installed a second boat ramp at Bighorn Fishing Access this fall. The new ramp is located downstream of the first ramp, and will provide a better site to launch and land boats during periods of high flow

MUSSELSHELL RIVER

The Musselshell Drainage was one of the worst drainages in the state this past year for precipitation. Spring runoff never materialized to any great extent, and river levels dropped to abnormally low levels by late spring. Fortunately all the reservoirs on the system were nearly full going into the season, and they were able to provide the necessary water for the irrigators. Supplemental irrigation flow helped keep river levels up for the fish, but the reservoirs all ended the season at low levels.

A few anglers reported finding sauger in the lower river below the town of Musselshell in the spring before water levels started to drop. Reports from catfish and bass anglers on the Musselshell River were almost nonexistent this year. Our sampling success on the lower Musselshell is limited, so any reports from anglers who fish the Musselshell are greatly appreciated. Spring electrofishing at Selkirk produced good catches of brown trout in a variety of sizes. There were lots of 14 to 18 inch fish with several over 19 inches, as well as good numbers of YOY browns. The largest brown trout sampled was 22.2 inches and weighed 2.48 pounds.

The upper Musselshell can be a fun alternative for anglers who prefer to fish smaller rivers. It remains to be seen how the lower flows this summer and the low reservoirs going into winter will affect the Musselshell fishery. If winter precipitation does not allow reservoirs to be refilled before the next irrigation season, the entire Musselshell drainage fishery could suffer next summer.

YELLOWSTONE RIVER

Record high flows in the Yellowstone River during 1996 and 1997 coupled with several winters with severe icing conditions contributed to major changes in channel morphology, river alignment and erosion throughout the basin. These extended high flows and harsh icing conditions resulted in reduced fish population estimates for 1997 within our monitoring sections located near Big Timber and at Laurel.

Preliminary spring 1999 fish population estimates made in the Yellowstone River near Big Timber indicate rainbow and Yellowstone cutthroat trout numbers rebounded 56% and 107%, respectively, following more normal river flows during 1998 and 1999. Brown trout numbers declined about 12% from 1997 estimates. Particularly encouraging is the significant increase in Yellowstone cutthroat trout numbers for the 1999 estimates. Yellowstone cutthroat trout are classified as a Montana Species of Special Concern because of a decline of about 90% in their historic range within the basin. A petition to list the species as endangered was filed in 1999.

Preliminary fall 1999 fish population estimates made in the Yellowstone River near Laurel indicate rainbow trout numbers increased 106% while brown trout numbers decreased 26% from fall estimates made in 1997. Total trout population numbers were up about 33%. While Yellowstone cutthroat trout made up 17% of the trout population near Big Timber; no cutthroat were collected near Laurel.

ROCK CREEK

Spring 1999 fish population estimates made in Rock Creek near Fox indicate the brown trout increased 60% while rainbow trout numbers decreased 40% from estimates made in 1996. Since brown trout outnumber rainbows about ten to one, total trout numbers within the section increased 38% during this period. Although not very abundant, brook trout numbers remained about the same.

Spring 1999 fish population estimates made in Rock Creek near Joliet indicate brown trout populations decreased 60% from estimates made in 1995, but were still higher (12%) than the estimate from 1990. Several recent high water events shortened the stream channel resulting in major downcutting and erosion along the upper part of the section, reducing the quantity and quality of the remaining fish habitat, as well as the fish population. On the positive side, one brown trout weighing about seven pounds was taken and released. This section also supports a few rainbow trout.

BIGHORN LAKE

Although high lake levels in Bighorn Lake caused some problems for the Park Service and the Bureau of Reclamation, it was another good year for fish. The reservoir filled to the bottom of the flood pool by mid-June and rose over nine feet into the flood pool by mid-July. Reservoir levels stayed above the flood pool until mid-August, and within a couple of feet of the flood pool through the fall. The higher lake levels flooded some shoreline areas that had not been under water for quite awhile, providing good fish habitat and adding nutrients to the system.

Spring electrofishing near the dam found a strong population of mature walleye in the 19 to 21 inch size range and another very strong group of 10 to 13 inch fish. Lower numbers of small walleye and walleye between 13 inches and 19 inches were also collected. Fall gill netting produced a catch rate of 6 walleye per net. Size ranges of these fish were similar to those seen during spring netting. There still appear to be several strong year classes coming up to maintain the Bighorn Lake walleye fishery. Forage fish populations were strong again this year with large schools of emerald shiners found throughout the lake. Walleye fishing in the lake started off well in the spring, remained good to great during the summer, and seemed to get even better when water temperatures started to cool down in the fall. Most anglers reported excellent fishing, with many of the fish in the 2-3 pound range.

The smallmouth bass fishery continues to improve in Bighorn Lake with smallmouths providing a good bonus fishery for many walleye anglers on the lake. A number of smallmouth were sampled during spring electrofishing and fall netting in the vicinity of the dam, indicating smallmouth are well established throughout the lake. The largest bass collected during sampling was 12.8 inches long and weighed 1.18 pounds, but anglers report finding an occasional bass in the 3 to 4 pound class. This fishery should continue to grow in the lake in the future.

COONEY RESERVOIR

Because of its proximity to Billings and Laurel, Cooney Reservoir receives heavy use by recreationists. Cooney is the most heavily fished lake or reservoir in Region 5, and it produced the current state record walleye in 1996. According to the most current figures, the walleye/trout fishery of this 756 acre reservoir supported 42,853 angler-days of use in 1997, and the use continues to increase each year. Spring electrofishing over the last four years has resulted in the tagging of 417 walleyes, which averaged 23.9 inches and 6.25 pounds. To date, reported returns by anglers have been low with a total of 36 tags returned. An additional 34 tagged walleyes were taken during electrofishing surveys and released. Anglers have kept 80% of the tagged walleyes they caught. Cooney walleyes are preying heavily on suckers and black crappies and appear to be controlling both prey species. Rainbow trout from fall 1999 sampling averaged 13.6 inches and 1.02 pounds.

A detailed creel study was conducted on Cooney from July 1, 1998 through September 7, 1998. This study was intended to help collect creel and angler use information, determine the number of anglers fishing for walleyes versus trout, gather harvest information on stocked rainbow and tagged walleyes, collect information on walleye predation on stocked rainbow trout and determine the ratio of shore anglers to boat anglers. Information collected from the creel survey is being analyzed and should be available later this winter. Future plans for Cooney call for installation of lights at main boat ramps to help address a major problem for night anglers.

ABSAROKA-BEARTOOTH AND CRAZY MOUNTAIN LAKES

Thirty-nine alpine lakes in the Absaroka-Beartooth Mountains and six in the Crazy Mountains were surveyed in

1999. Mountain lakes are surveyed by a two-person crew that backpacks into the majority of these remote waters. Information collected is used to update the high mountain lake data base and to evaluate whether or not current management objectives are being met. Our goal is to survey approximately 30-35 lakes per year and cover all the 348 lakes supporting fisheries about once every 10 years.

REGIONAL LAKES AND PONDS

Precipitation patterns were very erratic around the region this summer. As a result, some ponds looked very good at the end of the summer while others showed definite signs of drought. Two new bass ponds were planted for the first time this summer along with 12 other ponds that received supplemental plants. A warm, dry fall could be hard on all ponds in the region if winter eventually turns severe.

LAKE JOSEPHINE:

Lake Josephine, located in Riverfront Park in Billings, continued to provide a great kids and family fishery this summer. Small crappie and pumpkinseed sunfish were plentiful along with a fair population of smaller perch. This has been a great place to take a young anger to catch their first fish. Most of the crappie captured during spring gill netting measured 7 to 8 inches while the yellow perch averaged about 6.5 inches. Reports from bass anglers were not as good as last year, but there were still plenty of bass available for anglers willing to put in the time. Fishing early or late in the day was best. One 20 inch walleye was collected in a gill net this spring. This was another indication that ?bucket biologists? have been breaking the law again, because walleye have never legally been planted into Lake Josephine.

Largemouth bass reproduce in Lake Josephine, but survival of young fish is low due to the presence of many predators like perch and crappie. Natural recruitment is supplemented with a largemouth plant every other year. Lake Josephine received a plant of 10,000 two-inch largemouth bass this summer.

ARAPOOISH POND:

Arapooish Pond near Hardin has been one of the most consistent bass fisheries in Region 5 since the Big Horn County Parks Board and Fish, Wildlife and Parks installed an aeration system in the lake. This lake is entirely self-sustaining and produces a large number of bass each year. Fishing is usually best in the spring before the vegetation gets so thick that it becomes hard to fish, and again in the fall once the vegetation starts to die off. Most of the bass caught this year were around 9 to 10 inches, but there were still plenty of 14 to 16 inch bass available for anglers who put in the effort to find them. A few lunkers were reported caught in Arapooish again this year.

LAKE ELMO:

Lake Elmo continued to provide plenty of recreation for anglers of all ages as the trout fishery entered its second season. The planted rainbow overwintered fine in the lake. They did not, however, provided many ice fishing opportunities this past winter due to poor ice conditions. The few anglers willing to venture out on marginal ice did well, but there were only about two weeks all winter when the ice was even marginal. Once the ice broke up for good in the spring, the rainbow really went on a feeding spree, and fishing was great. Catch rates were high, and many limits of rainbow were harvested. Rainbow continued to provide a fishery through the summer, but catch rates dropped considerably once water temperatures warmed.

Approximately 10,000 catchable rainbow and 15,000 fingerlings were planted into Lake Elmo this year. These smaller fish provided the bulk of the summer fishery. When the trout fishing was slow, there were still plenty of smaller perch and an occasional crappie or sunfish available to keep things interesting. Channel catfish fishing picked up during mid-summer with a number of 2 to 3 pound catfish being caught. Catfish stocking rates were increased in Lake Elmo this summer to compensate for to the small size of catfish available. Fifteen thousand 2.5 inch channel catfish were planted in July.

The largest rainbow trout collected during seasonal sampling was a 12.5 inch fish weighing 0.8 pounds, captured in a spring gill net. The largest channel catfish, captured in the fall, was 20.5 inches long and weighing 3.15 pounds. A few small largemouth bass were also captured indicating some limited natural reproduction is still occurring in the lake. Bass have not been stocked into Lake Elmo for several years.

Angler use at Lake Elmo has increased significantly since rainbow stocking was initiated, and the lake has become a real gathering place for families and friends of all ages.

BROADVIEW POND:

Broadview Pond has suffered from low water levels the past two years. The pond was drawn down quite low last fall and went into winter in poor condition. It was partially refilled last spring, but was back down to even lower levels by mid-summer this year. This coming winter could be very hard on Broadview Pond if the weather turns bad. The large tiger muskie left in the lake could be the hardest hit.

Spring netting captured two tiger muskies, lots of crappie and a few largemouth bass. Both tiger muskies were just over 9 pounds and were 34.5 inches and 35 inches in length. A few 7 to 9 inch crappie were collected, but most were around 4 inches long. The largest bass collected was 11.9 inches and one pound.

During late summer 1998, 150 tiger muskies, averaging about 6.6 inches in length, were planted in Broadview to add another year class to the existing population. Fall gill netting captured one 17.3 inch, 1.03 pound tiger muskie from this plant. These one-year-old tiger muskies should be large enough now to start taking advantage of the abundant forage available in Broadview, and they should continue to grow well if they survive the winter.

DEADMANS BASIN:

Hopefully Deadmans Basin is on its way to regaining its past standings as one of the top trout reservoirs in Region 5. Gill net sampling collected three tiger muskies from Deadmans Basin this past spring. These fish were 14.7, 17.4, and 17.6 inches long and weighed 0.65, 1.18, and 1.32 pounds respectively. The two larger fish were probably from the plant of 2.5 inch tiger muskie made in June, while the smaller fish was probably a 6 to 9 inch fish planted in September. The great growth rates observed were similar to the first year growth rates seen in Lebo Lake in the past. At 17 inches these muskies should be large enough to start working on suckers half their size in Deadmans. With the food supply available in Deadmans, growth rates should continue to be great as these larger tiger muskies chew into the sucker population.

Tiger muskies are notoriously hard to sample, so we were fortunate in the spring to collect three fish in eight net sets in a lake the size of Deadmans. This sampling luck did not hold in the fall when eight nets failed to capture a single tiger muskie, even though another 2,700 tiger muskie had been added the lake during the spring and summer. One 10.5 inch tiger muskie was captured in a beach seine in early September which was the only sign that fish from the 1999 plant were alive and growing.

Spring gill netting in Deadmans Basin produced a good catch of rainbow with many fish in the 13 to 14 inch size range. Kokanee catch rates were also better than normal for the spring net series with some of the larger fish measuring over 14 inches long. The highlights of the spring net series, besides the tiger muskies, were three brown trout that were captured and released alive back into the lake. These fish weighed 9.9, 12.1 , and 13.1 pounds! They are probably doing their own share of sucker control in Deadmans.

Both floating and sinking gill nets in the fall net series were loaded with kokanee salmon. Most of the mature kokanee were over 14 inches long with some over 16 inches. These fish were in good shape, but most were ripe by the second week in October, so there may not be many left for the winter snagging fishery this fall. Sucker cath rates were well below average for the fall netting, but it was too soon to tell whether this had anything to do with the tiger muskies in the lake or if the kokanee filled the nets before the suckers could get caught.

Deadmans did not receive its normal kokanee plant this year due to lack of availability. A poor egg take last fall coupled with some serious problems with the water supply at the Somers hatchery resulted in a limited numbers of kokanee available for planting. The available fish were used to fill requests that had higher priorities than Deadmans. As a substitute, an extra 50,000 rainbow were planted into Deadmans Basin this year in addition to the normal plant of 200,000 rainbow. It will be interesting to watch how the fishery develops in Deadmans as the tiger muskie start impacting the sucker population.

REGION SIX - GLASGOW

FORT PECK RESERVOIR

Approximately 5,000 walleye spawners were captured and released during spring trap netting in the upper Big Dry Arm. average weight of female walleye was 6.0 pounds, with males averaging 2.0 pounds. Approximately 121 million walleye eggs were obtained from 1,759 females. These eggs provided 42 million walleye fry and 2.0 million fingerlings for Fort Peck Reservoir. A total of 1,845 northern pike were also caught during spring trapnetting. Female northerns averaged 8.1 pounds and males averaged 4.1 pounds.

Anglers reported that walleye fishing was fair throughout most of the season with lots of small fish. The last five years have provided some of the best walleye plants on record, which has substantially increased the number of small fish. Information provided by tournament officials of the Montana Governor's Cup Walleye Tournament, revealed that 914 walleyes over 14 inches were caught, under a five fish per day limit per boat, for a total of 1,750 pounds. Two trophy-sized walleye each weighing 14.4 pounds were caught during the tournament by anglers. The Rock Creek Tournament reported 829 fish over 14 inches caught under a five fish per day limit per boat. The two largest fish caught were 37.9 inches and 37.1 inches. Tournament officials reported many walleye under 14 inches were also caught.

FWP fisheries personnel conducted the annual spring and fall lake trout creel survey, and it appeared that most fish weighed approximately 5 pounds. Redirection of personnel during the spring walleye spawn and salmon spawn in the fall, prevented a typical in-depth creel, so fishing pressure and size distributions in 1999 may not be as accurate as previous years. FWP personnel witnessed a 28 pound lake trout caught in the fall. Several salmon over 20 pounds were caught in the fall by anglers as well.

During the 1999 Fort Peck salmon spawn, fisheries personnel collected approximately 135,000 chinook salmon eggs, utilizing 47 females and 91 males. Females averaged 30.7 inches and 12.4 pounds, and males averaged 29.0 inches and 9.9 pounds. Thirty percent of the females spawned were donated by anglers. This volunteer program produced approximately 40,000 eggs of the total taken. Fish health samples were taken from spawned fish to monitor any presence of bacterial, viral and parasitic infections. In addition to eggs taken from Fort Peck, North Dakota had a record egg-take and was able to supply 250,000 salmon eggs for Montana. South Dakota also had surplus eggs and supplied 200,000 salmon eggs for use in Montana. This tri-state effort secured 585,000 eggs for the Fort Peck salmon program in 1999. Although this year's effort is outstanding, a very limited return of salmon is anticipated for the fall of 2000, as no salmon eggs were produced in 1997.

A joint effort with the Corps of Engineers made it possible to develop a small hatching and rearing facility in the Fort Peck Power House in the fall and winter of 1999. Twelve hatching jars, with 2 holding tanks were plumbed into the power house. This made it possible to raise salmon past the critical eye-up stage before transporting to other hatcheries for rearing, or provided the option of raising fry to fingerlings at Fort Peck.

Other activities relating to the Fort Peck fishery include expansion of the walleye spawning building. When completed, the facility will hold an additional 6 holding tanks with potential for 2 more. The new tanks should minimize handling mortality of walleye used during the spawn and will also provide more space to handle fertilized eggs. The use of large trap nets, called merwin traps, aided in capturing more spawners for the 1999 spawn. The merwin traps require less effort to collect walleye than the traditional frame traps and capture more fish per night. Future use of these traps may require more holding space for captured walleye.

PADDLEFISH ABOVE FORT PECK RESERVOIR

Though no creel census was conducted during 1999, the catch appeared to be below average, as trigger flows did not arrive until mid-June. This shortened the snagging season considerably. Another 380 paddlefish were tagged by the department this spring. Tag returns indicate a low rate of harvest, consistent with previous years. A creel census is planned for Spring, 2000.

MILK RIVER

The purpose of the Milk River study is to collect baseline data on the population structure and habitat use of fishes using standardized sampling methods. The project is a combined effort between Montana Fish Wildlife and Parks, U.S. Geological Survey, Montana Cooperative Fisheries Research Unit, and the U.S. Bureau of Reclamation. Information generated will allow for future evaluations and comparisons of fish community structure in the Milk River. This was the second year of a three year project.

During this year's fall survey (September through October), sampling occurred from Dodson Dam to the mouth of the Milk. A total of 2,269 fish, representing 27 species, were collected using drift nets, hoop nets, gill nets, bag seines, and electrofishing. Tissue samples were taken for genetic evaluation of sauger. Approximately forty samples were collected, all below Vandalia Dam, the first major barrier heading upstream on the Milk River that is impassible to fish. All sauger were T-tagged and released, as well as, other fish species of adequate size. If you happen to catch one of these tagged fish, tag numbers, location, fish lengths and weights can be reported to the Fort Peck Montana Fish, Wildlife and Parks Glasgow office. A history of the fish will be sent in return for reported tagged fish. Some of the "whoppers" included a ten pound channel catfish, an eleven pound walleye, and a seventeen pound northern pike. Several nice smallmouth bass were captured as well.

Spring sampling on the Milk was limited, but noteworthy. Most of the sampling occurred within the first ten miles of river. Of particular interest was the large number of shovelnose sturgeon captured (454, as compared to 3 last year). All fish were tagged with cinch tags in their dorsal fin. It isn't known if this was an unusual year for this "run" due to limited sampling in previous years. A total of 44 sauger were also captured, along with 23 blue suckers, and 2 burbot. A large number of paddlefish were also observed in the area, but only one was captured.

LOWER MISSOURI AND YELLOWSTONE RIVER PALLID STURGEON STUDY

Pallid sturgeon, native to the Missouri and Mississippi river systems, was listed as an endangered species in 1990. Only 250-300 adults remain in the Missouri River between Fort Peck Dam and Lake Sakakawea, North Dakota, and the Yellowstone River below Intake Diversion Dam. No evidence of successful spawning, i.e. the capture of young pallids has been documented in recent years.

A recovery plan for pallids was developed and includes the capture of pallids in the wild for spawning and propagation of the offspring in hatcheries. Hatchery spawning has been successful the last three years in Federal hatcheries in North and South Dakota. A total of 750 yearling pallids were released in the lower Montana reaches of the Missouri and Yellowstone rivers during August, 1998. Forty-nine of those fish were implanted with radios and monitored through October, 1998. Data on movements, habitat parameters and current velocities at relocation sites were obtained. Several of the released pallids were captured in 1999 by fishermen and FWP netting crews and appeared to be in excellent condition.

Plans to release additional yearling and two-year-old hatchery-reared pallids this year were put on hold due to disease outbreak at the Garrison National Fish Hatchery. A form of iridovirus, found in white sturgeon, was originally suspected. However, testing by fish pathologists at the University of California-Davis, and the Bozeman Fish Technology Center, to isolate and identify the disease organism have been negative to date.

It is hoped the disease problem will be resolved and we can continue to release pallids in the wild. Without continued stocking, the future of pallid sturgeon remains in doubt.

FRESNO RESERVOIR AND TAILWATER FAS

Another favorable water year provided some good fishing at Fresno. Catch rates appeared to be slightly below the excellent year experienced in 1998. However, larger fish were taken in 1999. Reproduction of sport and forage fishes was good. Adult walleye numbers are down from the all time high experienced in 1998, but are still present in good numbers. The northern pike population has taken a downturn, which is beneficial for the walleye and probably for the pike themselves. An Environmental Assessment to look at a potential forage fish for Fresno is wrapping up, and should be available for review this winter. The Bureau of Reclamation (BOR) installed new latrines and repaired the main boat ramp. FWP installed a new latrine and shelter below Fresno dam this year. Fishing for trout in the fast water below the dam is becoming very popular. Rainbows are numerous and brown trout introduced 3 years ago are approaching 5 pounds. More floaters are utilizing the boat launching facilities.

NELSON RESERVOIR

A creel census was conducted on the reservoir this summer and a population estimate was made of the walleye and pike populations. The data is still being analyzed and results will be available this winter. Of interest was the capture of 3 walleye that were marked during the last population estimate in 1984. The fish were at least 18 years old, as nothing under 3 years of age was marked that year. Much thanks goes out to the area fisherman and the Malta Chapter of Walleyes Unlimited for their assistance in this effort. Fishing was fair for walleyes this summer and netting indicated adult numbers are down form 1998. Reproduction of sport and forage fish improved from 1998. A new boat ramp location was identified with the help of the BOR, and a local citizens advisory committee. FWP surveyed the site and provided a site plan, which included a ramp, latrine, and parking area. The BOR has plans to begin construction of these facilities in summer, 2000.

BEAVER CREEK RESERVOIR

Fishermen have begun to figure out how to catch the chunky walleye roaming this water. Numerous fish in the 4-7 pound range were taken this summer. Night crawler rigs are giving way to crank baits and large rubber bodied jigs in order to get by the abundant, often pesky, perch. Trout survival has been poor the last few years due to northern pike predation. However, pike numbers appear to be down somewhat and over 100 were removed for stomach content analysis by an MSU-Northern biology student. Surviving trout are in excellent condition and 2-3 pounders are often captured by anglers. Yellow perch are abundant and are much sought after by ice fisherman. Smallmouth bass are showing up in the creel in fairly good numbers.

BEAR PAW LAKE

Though 7,500 pounds of white suckers were removed in 1999, netting indicates the population of suckers is holding steady. No recruitment from young fish in the lake is occurring, since the introduction of smallmouth bass (suckers are eaten as quickly as they are produced). There may be recruitment of adult fish from upstream sources. Condition of both rainbow and cutthroat trout is slowly improving. In 1999, new latrines and roads were installed and constructed.

H.C. KUHR RESERVOIR

This reservoir has been a consistent trout producer for anglers the last few years. Numerous rainbows in the 2-3 pound range have been taken on both bait and flies. Water levels are somewhat low going into the winter, which is of some concern for winter survival. However, winter has been pretty mild through November, and perhaps a continued moderate weather pattern will prevent winterkill.

DRY FORK RESERVOIR (SWARTZ DAM)

This reservoir north of Chinook has been a steady producer of pike and perch. Perch up to 2 pounds were taken through the ice last winter. Largemouth bass introductions have not been successful. The forage base has improved to the point that walleye are being considered for introduction in 2000. An Environmental Assessment will be conducted during this winter and spring, to determine any concerns prior to stocking.

COW CREEK RESERVOIR

This is the "new kid on the block" which opened in August 1999, for the first time to public fishing. The 70-acre impoundment is located about 15 miles south of Lloyd on Cow Creek and is made available through the courtesy of the Bill Cowan family. A healthy population of 1-2 pound walleye resides in the reservoir along with channel catfish, tiger muskie and black crappie. Boats are allowed, but only at no wake speeds. It is not open to live minnow fishing. The owner does not allow overnight camping or open fires.

REGION SEVEN - MILES CITY

YELLOWSTONE RIVER PADDLEFISH

Angling for paddlefish during the 1999 season turned out to be an exceptional experience. Department creel census clerks checked 1254 paddlefish during the 6 week season. Steadily increasing flows in the Yellowstone River through the months of May and June, provided conditions needed for paddlefish migration from North Dakota waters. Harvest rates of paddlefish increased during mid-June until a seasonal harvest closure was implemented by the Department. Catch and release angling for paddlefish continued for the remaining 10 days of the season.

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TONGUE RIVER RESERVOIR

Construction of the new spillway structure on the Tongue River Dam is now complete and access to the tailrace fishery has been restored. The new dam increased reservoir levels by four vertical feet. Biologists hope the additional volume will equate to stable spawning conditions for black and white crappie. The increased volume flooded shore-line vegetation providing additional spawning areas for crappie. Spawning efforts from the 1999 season should be evident as larger fish within 2-3 years.

TONGUE RIVER T&Y CANAL FISH SCREENING

Construction of the fish by-pass structure on the T&Y Canal was completed this year. Initial investigations concluded that the structure appeared to be excluding fish from being captured in the canal system. Operational concerns with the new structure will necessitate some fine-tuning. Full evaluation of the by-pass will be conducted by FWP biologists during spring of 2000. The new fish by-pass will keep both forage and game fish species from being lost to the irrigation canal.

COOPERATIVE YELLOWSTONE RIVER PROJECT

Cooperative efforts to evaluate fish capture in the Intake Diversion was continued this year. Biologists from FWP and the US Bureau of Reclamation continued to evaluate methods of excluding fish losses to the irrigation canal located near Glendive, Montana. Efforts to prevent fish entrainment in the canal will continue until suitable solutions are found.

MONTANA'S RECORD-SETTING FISH (1998)

Species	Weight	Angler	Year	Location
Artic Grayling	3.21 lbs.	Frederick C.Dahl	1994	Handkerchief Lake
Bigmouth buffalo	57.75 lbs.	Craig D. Grassel	1994	Nelson Reservoir
Black bullhead	2.33 lbs.	Darwin Zempel, Jr.	1994	Lower Flathead River
Black crappie	3.13 lbs.	Al Elser	1973	Tongue River Reservoir
Blue sucker	11.46 lbs.	Doug Askin	1989	Yellowstone River (near Miles City)
Bluegill	2.64 lbs.	Brent Fladmo	1983	Peterson's Stock Dam
Brook trout	9.06 lbs.	John R. Cook	1940	Lower Two Medicine Lake
Brown trout	29.00 lbs.	E. H. Peck Bacon	1966	Wade Lake
Bull trout	25.63 lbs.	James Hyer	1916	unknown
Burbot (ling)	17.08 lbs.	Jeff E. Iwen	1989	Missouri River (near Wolf Point)
Carp*	**40.20 lbs.**	**Jared Albus**	**1998**	**Nelson Reservoir**
Channel catfish*	**27.17 lbs.**	**Ed Ellertson**	**1998**	**Castle Rock Reservoir**
Chinook (king salmon)	31.13 lbs.	Carl L. Niles	1991	Fort Peck Reservoir
Cisco	1.46 lbs.	Jim Liebelt	1990	Dredge Cut Trout Pond
Coho salmon	4.88 lbs.	Irven Stohl	1973	Fort Peck Reservoir
Cutthroat trout	16.00 lbs.	William D. Sands	1955	Red Eagle Lake
Flathead chub*	**0.53 lbs.**	**Lyle McKeever**	**1998**	**Marias River**
Freshwater drum	20.44 lbs.	Richard C. Lee	1987	Fort Peck Reservoir
Golden trout	4.90 lbs.	Carl Radonski	1993	Lightning Lake
Goldeye	2.91 lbs.	Vance Bubba Kielb	1989	Irrigation canal (west of Malta)
Green sunfish	0.56 lbs.	Roger Fliger	1991	Castle Rock Reservoir
Kokanee (salmon)	5.94 lbs.	Forrest Johnson	1976	Pishkun Reservoir
Lake trout	42.00 lbs.	Dave Larson	1979	Flathead Lake (east shore)
Lake whitefish	10.08 lbs.	Theo Hamby	1995	Lower St. Mary Lake
Largemouth bass	8.16 lbs.	Juanita A. Fanning	1984	Milnor Lake
Largescale sucker	5.06 lbs.	Loren Kujawa	1996	Kootenai River
Longnose sucker	3.27 lbs.	Ray Quigley	1988	Marias River
Mottled Sculpin	0.03 lbs.	Blaine X. Grisak	1997	Sheep Creek (Meagher Co.)
Mountain whitefish	5.09 lbs.	Mervin Frog Fenimore	1987	Kootenai River
Northern pike	37.50 lbs.	Lance Moyler	1972	Tongue River Reservoir
Northern squawfish	7.88 lbs.	Darrel Torgrimson	1991	Noxon Rapids Reservoir
Paddlefish	142.50 lbs.	Larry Branstetter	1973	Missouri River
Peamouth	0.64 lbs.	Gordon Stewart	1991	Ashley Creek
Pumpkinseed	0.95 lbs.	Tim Colver	1985	Milnor Lake
Pygmy whitefish	0.16 lbs.	Orlin Iverson	1982	Ashley Lake
Rainbow trout	33.1 lbs.	Jack Housel , Jr.	1997	Kootenai R. (David Thompson Bridge)
Rainbow-cutthroat hybrid	30.25 lbs.	Pat Kelly	1982	Ashley Lake
River carpsucker	3.50 lbs.	James Jessen	1991	Yellowstone River near Terry
Rock bass	.057 lbs.	Don Holzheimer	1989	Tongue River Reservoir
Sauger	8.81 lbs.	Gene Moore	1994	Fort Peck Reservoir
Shorthead redhorse sucker	4.68 lbs.	Ray Quigley	1985	Marias River near Loma
Shortnose gar	3.06 lbs.	John Johnson	1977	Fort Peck dredge cuts
Shovelnose sturgeon	13.72 lbs.	Sidney L. Storm	1986	Missouri River
Smallmouth bass*	**6.20 lbs.**	**Lonnie Quast**	**1998**	**Fort Peck Reservoir**
Smallmouth buffalo	32.63 lbs.	Richard Liesener	1994	Nelson Reservoir
Stonecat	0.54 lbs.	Dale Bjerga	1996	Milk River
Tiger muskellunge	27.00 lbs.	Dan Dupea	1994	Lebo Lake
Tiger Trout	4.04 lbs.	Joe Sobczak	1997	Bear Lake
Utah chub	1.81 lbs.	Eugene Bastian	1992	Canyon Ferry Reservoir
Walleye	16.38 lbs.	Steve McMorris	1996	Cooney Reservoir
White bass*	**2.25 lbs.**	**Vernon Pacovsky**	**1998**	**Missouri River**
White crappie	3.68 lbs.	Gene Bassett	1996	Tongue River Reservoir
White sturgeon	96.00 lbs.	Herb Stout	1968	Kootenai River
White sucker	5.33 lbs.	Fred Perry	1983	Nelson Reservoir
Yellow bullhead*	**0.93 lbs.**	**Carl Radonski**	**1996**	**Tongue River Reservoir**
Yellow perch	2.37 lbs.	Vernon Schmid	1988	Ashley Lake

***New Montana record for 1998**

Eastern Montana Leads the Way

1998 Montana Fish Records

Like all records, fish records are made to be broken. But it's not often that a Montana angler breaks his own record in two consecutive years.

Bainville angler **VERNON PACOVSKY**, who set a new white bass record in 1997, accomplished that unusual feat again in 1998. Fishing with a minnow on the Missouri River south of Bainville last September, he landed a white bass weighing 2.25 pounds, besting his 1997 record fish by nearly half a pound. Remarkably, says Pacovsky, in his many years of fishing, he has only caught four white bass - and every other one was a state record!

Added to the fish records list in 1986, the white bass is a relative newcomer to Montana. Dr. C. J. D. Brown's book, *Fishes of Montana*, published in 1971, does not mention the white bass. A 1996 book, *A Field Guide To Montana Fishes*, by George D. Holton and Howard E. Johnson, lists it as a native to eastern Canada, the Great Lakes, and the Mississippi River drainage south to Louisiana and Texas. According to Holton and Johnson, Montana's white bass came up the Missouri River from Lake Sakakawea in North Dakota, where they were planted sometime after construction of Garrison Dam.

Another Montana bass record fell in 1998 - the smallmouth. Strangely enough, the smallmouth and white bass are not closely related. The smallmouth is in the sunfish family, while the white bass is in the temperate bass family. **LONNIE QUAST** of Billings, fishing in Fort Peck Reservoir's Fourchette Creek Bay last May, caught a 6.20 pound whopper that mesured about 20 inches in length. His fish edged the previous record smallmouth caught by Mike Otten in 1996, also in Fourchette Bay, by a tenth of a pound.

Two other Billings anglers garnered fish records in 1998, **CARL RADONSKI** landed a 0.93 pound yellow bullhead in Tongue River Reservoir, besting the previous mark of 0.84 pounds. Radonski, who also holds the state golden trout record for a fish caught in 1993, is currently the only angler to claim two Montana fish records. And **ED ELLERTSON** took a channel catfish weighing 27.17 pounds in Castle Rock Reservoir near Colstrip, eclipsing a 25.89 record from Fort Peck Reservoir that has held since 1984.

Other record fish taken in 1998 included a 40.20 pound carp arrowed in Nelson Reservoir by **JARED ALBUS** of Hinsdale, and a 0.53 pound Flathead chub caught in the Marias River by **LYLE MCKEEVER** of Loma. Albus' monster carp shaded a 39.77-pounder taken last year with bow and arrow at Eyraud Lakes, while McKeever's chub smashed the previous mark of 0.31 pounds from the Missouri River.

Indeed, the fish records are mace to be broken. Records for about half of the 56 species included on the list have been broken since 1990. Should you be among a handful of Montana anglers lucky enough to catch a potentially record-setting fish in 1999, keep the following thoughts in mind. FWP requires that you catch the fish legally, and that you have it weighed before witnesses on a government-inspected scale, such as those found in most grocery stores. An FWP employee must positively identify the fish, either through direct examination or with the help of a good color photo. Direct examination is much preferred by FWP biologists - in some cases, a photo will not suffice to verify the species. And if possible, have your fished weighed quickly, before it loses precious ounces to dehydration. It could make the difference between a record and a runner-up.

–by Dave Books, Montana Outdoors, May/June 1999

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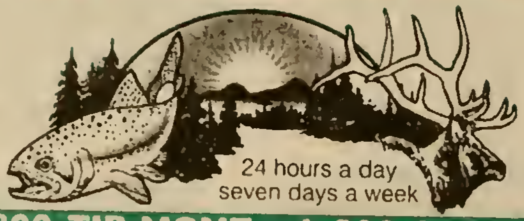

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